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Indian Standard

CODE OF PRACTICE FOR APPLICATION OF BITUMEN MASTIC FOR WATERPROOFING OF ROOFS

(Fifth Reprint JULY 1991)

UDC 691·167 : 699·82 : 69·024·158

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 5 *February* 1968

Indian Standard
CODE OF PRACTICE FOR APPLICATION OF BITUMEN MASTIC FOR WATERPROOFING OF ROOFS

Waterproofing and Damp-Proofing Sectional Committee, BDC 41

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Indian Standard
CODE OF PRACTICE FOR APPLICATION OF BITUMEN MASTIC FOR WATERPROOFING OF ROOFS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 20 October 1967, after the draft finalized by the Waterproofing and Damp-Proofing Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 Bitumen mastic has proved to be a successful waterproofing material and is being applied to roof and wall surfaces for waterproofing treatment. The requirements for bitumen mastic suitable for waterproofing of roofs are covered by IS : 3037-1965*. This standard is intended to cover the entire operation of treating a roof surface using bitumen mastic for waterproofing.

0.3 In the formulation of this standard due weightage has been given to international co-ordination among the standards and practices prevailing in different countries in addition to relating it to the practices in the field in this country. This has been met by deriving assistance from B.S. CP 144 : Part 2 : 1966 'Roof coverings: Part 2 Mastic asphalt' issued by the British Standards Institution.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard lays down the procedure for applying bitumen mastic for waterproofing of roofs and its maintenance.

2. MATERIALS

2.1 Bitumen Mastic — This shall conform to IS : 3037-1965*

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*Specification for bitumen mastic for use in waterproofing of roofs.

†Rules for rounding off numerical values (*revised*).

2.2 Bonding Materials — These shall consist of blown type bitumen conforming to IS : 702-1961* or residual bitumen conforming to IS : 73-1961† or a mixture thereof, selected to withstand local conditions of prevailing temperature and gradient of roof surface. The penetration of blown type bitumen shall be limited to 45 when tested in accordance with IS : 1203-1958‡.

2.3 Reinforcement — Bitumen coated plain expanded metal lathing used for laying bitumen mastic to vertical or sloping surfaces.

2.4 Underlay or Isolating Membrane — A layer of bitumen felt conforming to IS : 1322-1965§.

2.5 Vapour Barrier — The vapour barrier should consist of hessian based type 3 felt conforming to IS : 1322-1965§ with minimum overlaps of 100 and 75 mm at the end and the sides of strips of felt. This is used, where necessary, as an isolating layer between the roof deck and the insulating materials to protect the insulation against the absorption and the effects of moisture from below.

3. NECESSARY INFORMATION

3.1 The designer of the building shall make sure that he has sufficient information to enable him to efficiently design, detail and specify the whole of the work involved in a building and to provide all relevant information to those who may be affected. Consideration shall include details of the general design of the roof, its covering and finish in relation to such requirements as may affect them. In addition to the information given in IS : 3067-1966‖ the following points shall also be noted:

a) Height from ground level and particulars of access to each roof;
b) Hoisting facilities available at site;
c) Positions available for plant and materials;
d) When the bitumen mastic roofing has to be laid in stages, the approximate interval of time between stages;
e) Slope of roof; and
f) Any special or unusual features.

3.2 Details of Construction — The following points shall be observed:

a) Drawings showing the areas of roofing to be covered and the associated details;

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*Specification for industrial bitumen (*revised*).

†Specification for paving bitumen (*revised*).

‡Methods of testing tar and bitumen : determination of penetration.

§Specification for bitumen felts for waterproofing and damp-proofing (*revised*). (Since revised).

‖Code of practice for general design details and preparatory work for damp proofing and water proofing of buildings.

b) Degree and direction of slopes;

c) Thickness of bitumen mastic and number of coats;

d) Description of base over which the bitumen mastic is to be laid, for example, concrete, hollow beams, hollow blocks, timber, laminated or particle board;

e) Description of the type and thickness of any thermal insulating material;

f) Particulars concerning unusual surfaces, for example, metal and glazed surfaces, over or against which the bitumen mastic is to be laid;

g) The form of key proposed on vertical and sloping work to ensure adhesion of the bitumen mastic; and

h) Description of any special type of surface finish, if any, to be laid over the bitumen mastic, for example, solar reflective treatment, concrete tiles or screedings cut into tile form, etc.

3.3 Time Schedule — During the preparation of a time schedule for the building work, the waterproofing contractor shall be given all relevant information from the schedule so that the periods of time to be allowed for various waterproofing operations are decided in agreement with him. This will ensure that the waterproofing contractor has reasonable notice of the approximate times when his services will be required at the site.

3.3.1 All work above roof level should be completed before the bitumen mastic is laid. If work has to be carried out on or above the bitumen mastic after laying, provision shall be made for complete protection of the bitumen mastic by the main contractor.

4. DESIGN CONSIDERATIONS

4.1 The primary function of bitumen mastic is to provide a waterproof covering to a roof. The different considerations given in **4.2** to **4.10** should be taken into account for the effectiveness of the waterproofing treatment.

4.2 Weather Resistance — The weather resistance of bitumen mastic as a roof covering depends on the following:

a) The design, condition and strength of the base including its suitability and the nature of surface to receive mastic roofing; and

b) The technique of laying and workmanship.

4.3 Base to Receive Asphalt — The base shall be strong enough to carry its own weight, the weight of the covering, insulation materials, and any additional surface finishes together with live load and wind load. The designer should study the need for movement joints in the structure and it is essential that these be located at each part of the change of direction of the roof deck. The movement joints should be continuous through vertical upstands, walls and edges of buildings.

4.3.1 *Preparation of Surface* — The surface on which bitumen mastic is to be laid shall be true, plane and even, free from ridges, hollows and indentations. Where bitumen mastic is to be keyed to a surface the screed should be designed to remain free from cracks.

4.3.2 *Slopes to Flat Surface* — Bitumen mastic shall be laid to an even thickness on flat surfaces. The slopes shall be provided in the base on which the roof covering is to be laid. To ensure adequate drainage, the slopes shall be formed to even gradients of not less than 1 in 60.

4.3.2.1 For concrete, hollow tile, precast hollow beam of similar construction with an irregular surface, all slopes except when provided as part of the structure shall be formed of a screeding which shall be floated to a plane, even surface free from ridges and indentations. Drainage holes shall be provided to prevent any water being trapped in the cavities of the hollow tiles or beams or in the substructure.

4.3.2.2 When the base of the roof is formed in timber, the slopes may be formed by sloping the joists.

4.4 Isolating Membrane or Underlay — On all flat roofs, it is essential that direct contact between the base and the bitumen mastic roofing is avoided by interposing an isolating membrane which shall be laid loose on a concrete roof and shall be nailed down on a timber roof with not less than 100 mm and 75 mm lapped joints at the ends and the sides respectively.

4.4.1 On vertical and steeply sloping timber surfaces (slope greater than 30°) an isolating membrane shall be interposed between the timber base and the bitumen mastic. The isolating membrane shall be fixed with galvanized round extra large headed nails with a diameter of 11 mm and overall length of 20 mm conforming to IS : 723-1961* at not more than 150 mm centres.

4.5 Thermal Insulation — Where it is necessary to prevent fluctuation of temperature inside a building to conserve heat or to prevent an increase in temperature through the roof structure, additional thermal insulation is obtainable by placing a layer of insulating material immediately below the bitumen mastic roofing. A vapour barrier as shown in Fig. 1 shall be laid between the base and the insulation layer.

4.6 Keying — Bitumen mastic will not adhere satisfactorily to vertical and steeply sloping surfaces unless such surfaces afford an adequate key. The following preparations shall be provided.

4.6.1 When bitumen mastic is applied to vertical surfaces, including skirtings and upstands against brickwork, stone or concrete, the top of the bitumen mastic shall be tucked into a continuous groove of not less than

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*Specification for mild steel wire nails (*revised*) (Since revised).

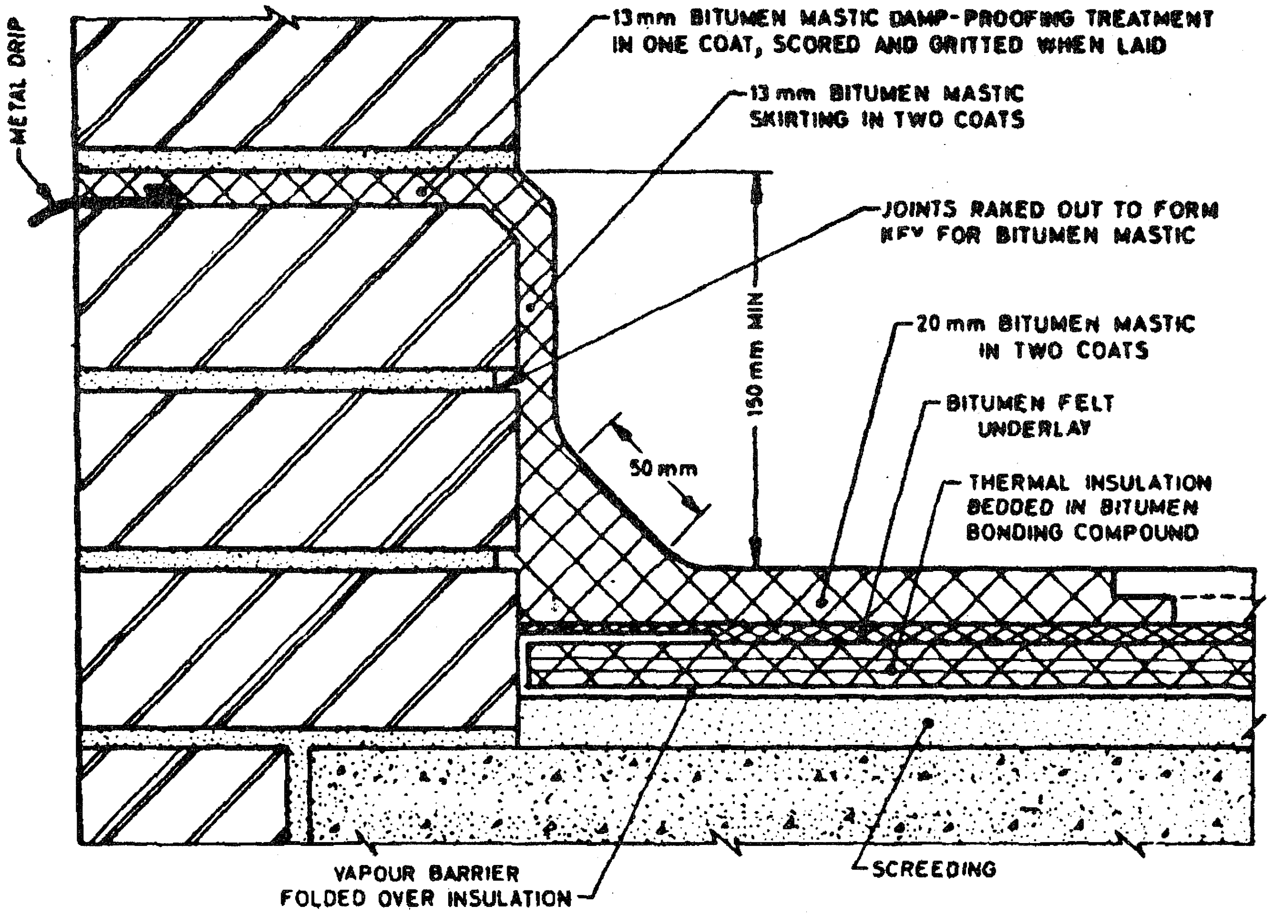
METAL DRIP
13 mm BITUMEN MASTIC DAMP-PROOFING TREATMENT IN ONE COAT, SCORED AND GRITTED WHEN LAID
13 mm BITUMEN MASTIC SKIRTING IN TWO COATS
JOINTS RAKED OUT TO FORM KEY FOR BITUMEN MASTIC
150 mm MIN
20 mm BITUMEN MASTIC IN TWO COATS
BITUMEN FELT UNDERLAY
50 mm
THERMAL INSULATION BEDDED IN BITUMEN BONDING COMPOUND
VAPOUR BARRIER FOLDED OVER INSULATION
SCREEDING

FIG. 1 BITUMEN MASTIC LAID ON THERMAL INSULATING MATERIAL

25 × 25 mm formed in the structure and its exposed part shall be formed with a splay to shed rain water.

4.6.2 *Brickwork* — Horizontal joints in the brickwork should not be less than 10 mm wide, the mortar shall be raked out and brushed clean to form a key to the bitumen mastic (*see* Fig. 2). When bricks have an extremely smooth face, an additional key shall be provided by hacking or similar treatment.

4.6.3 *Stonework* — The type of key required depends entirely on the kind of stone and on the type of stonework. The surface of the stone shall always be as rough as possible.

4.6.4 *Concrete* — All vertical concrete surfaces and those with a slope greater than 30° shall be provided with continuous grooves 25 × 25 mm at approximately 600 mm centres and the surface of the areas between the grooves shall be hacked, if found smooth (*see* Fig. 3). The screeding to sloping surfaces greater than 30° and vertical surfaces shall be formed with continuous grooves 25 × 25 mm at about 600 mm centres and the surface areas between the lines of grooves must be finished with a wooden float and then lightly scored in a horizontal direction.

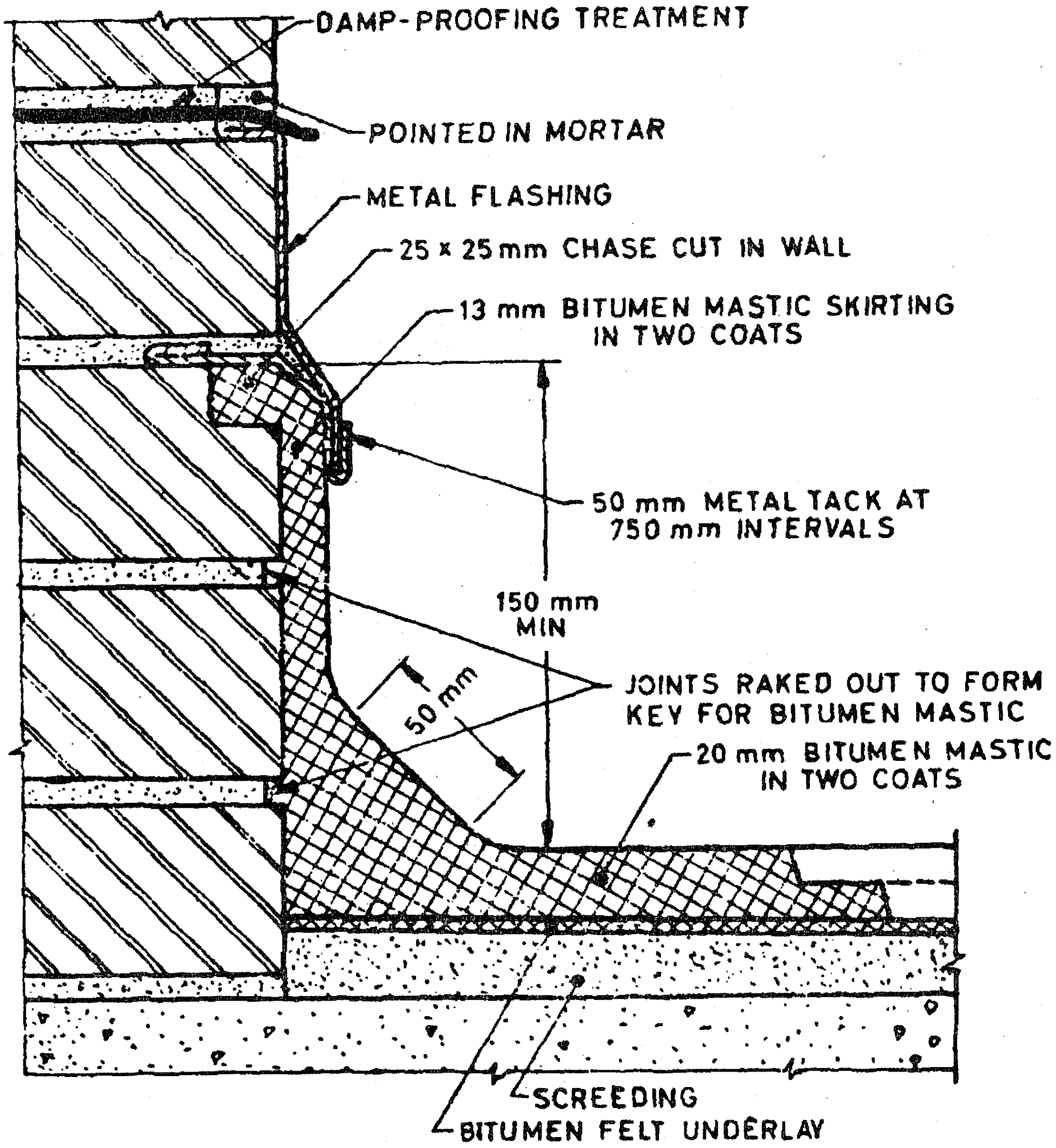
DAMP-PROOFING TREATMENT
POINTED IN MORTAR
METAL FLASHING
25 × 25 mm CHASE CUT IN WALL
13 mm BITUMEN MASTIC SKIRTING IN TWO COATS
50 mm METAL TACK AT 750 mm INTERVALS
150 mm MIN
50 mm
JOINTS RAKED OUT TO FORM KEY FOR BITUMEN MASTIC
20 mm BITUMEN MASTIC IN TWO COATS
SCREEDING
BITUMEN FELT UNDERLAY

FIG. 2 BITUMEN MASTIC LAID ON SCREEDED ROOF AND BITUMEN MASTIC SKIRTING TO BRICK WALL

4.6.5 *Timber* — To provide an adequate key for bitumen mastic laid on vertical timber surfaces and those of slope greater than 10°, also at junctions formed with such surfaces, a layer of metal reinforcement shall be fixed securely by means of nails.

4.6.6 *Metal* — All metal surfaces shall be primed with a rubber bitumen emulsion before the bitumen mastic is applied.

4.6.7 *Other Types of Surfaces* — Surfaces which are glazed shall be cleaned and hacked. Surface coatings, such as paint, distemper or lime wash shall be removed and the base so exposed shall be hacked and wire brushed.

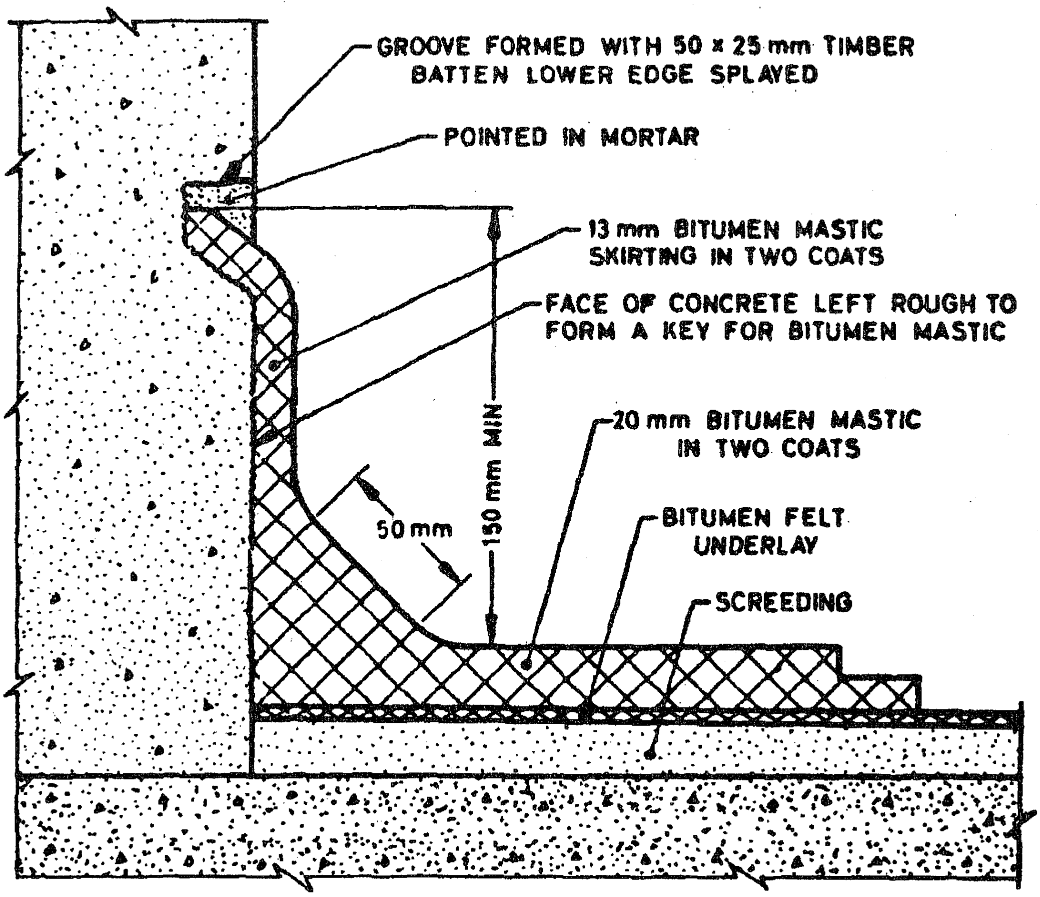
GROOVE FORMED WITH 50 × 25 mm TIMBER BATTEN LOWER EDGE SPLAYED
POINTED IN MORTAR
13 mm BITUMEN MASTIC SKIRTING IN TWO COATS
FACE OF CONCRETE LEFT ROUGH TO FORM A KEY FOR BITUMEN MASTIC
20 mm BITUMEN MASTIC IN TWO COATS
BITUMEN FELT UNDERLAY
SCREEDING
50 mm
150 mm MIN

FIG. 3 BITUMEN MASTIC LAID ON SCREEDED ROOF AND BITUMEN MASTIC SKIRTING TO CONCRETE WALL

4.7 Timber Construction — Where roofing is to be laid on timber boarding, the boards shall be well seasoned, of not less than 25 mm nominal thickness and well nailed and closely clamped together with tongued and grooved joints, or closely butted if plain edges; arrises to open edges should be rounded. The whole structure should be rigid. The construction shall minimize the effects of shrinkage, warping and displacement or relative movement of the timber and care should be taken to guard against any conditions which might allow decay, partly through the moisture already present in timber or resulting from the ingress of water from other parts of the structure. To avoid fungal attack, ventilation shall be provided between the roof boarding and the ceiling. Adjacent to vertical walls a free-standing wooden kerb shall be securely nailed to the roof deck and fixed so as to leave an air space between the wall and the base (*see* Fig. 4). The timber base shall be protected from rain water during construction. Before the underlay or the bitumen mastic is laid, any timber affected by dampness shall be allowed to dry. Therefore, the fixing of ceilings should be delayed as long as possible.

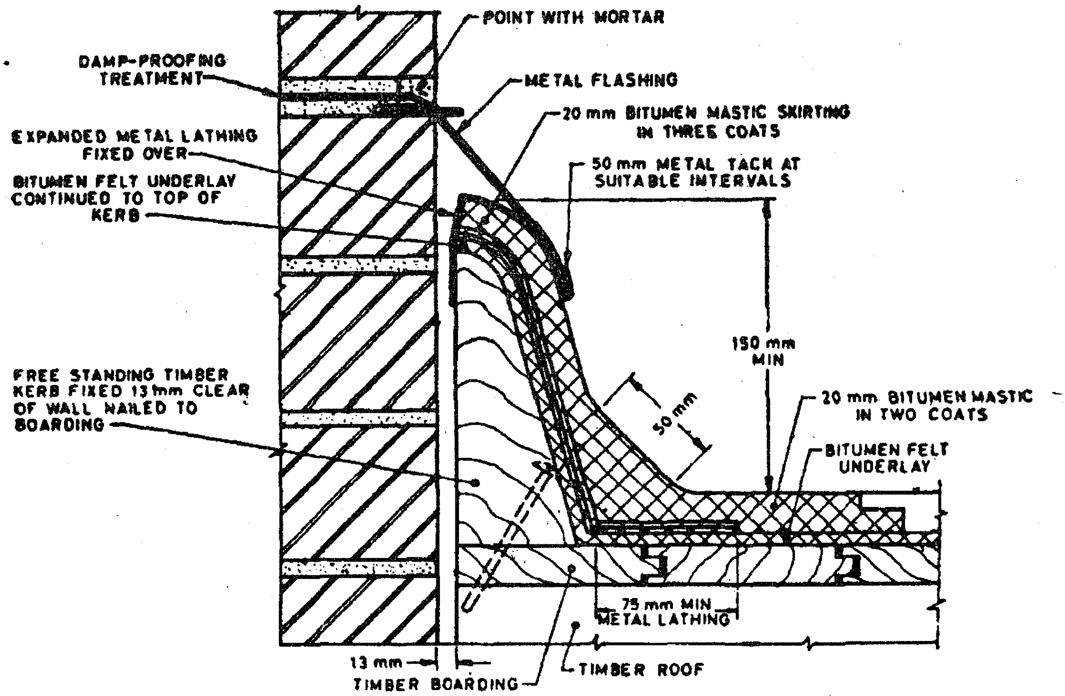
POINT WITH MORTAR
DAMP-PROOFING TREATMENT
METAL FLASHING
20 mm BITUMEN MASTIC SKIRTING IN THREE COATS
EXPANDED METAL LATHING FIXED OVER
BITUMEN FELT UNDERLAY CONTINUED TO TOP OF KERB
50 mm METAL TACK AT SUITABLE INTERVALS
150 mm MIN
FREE STANDING TIMBER KERB FIXED 13 mm CLEAR OF WALL NAILED TO BOARDING
50 mm
20 mm BITUMEN MASTIC IN TWO COATS
BITUMEN FELT UNDERLAY
75 mm MIN METAL LATHING
13 mm
TIMBER BOARDING
TIMBER ROOF

FIG. 4 BITUMEN MASTIC LAID ON TIMBER ROOF AND BITUMEN MASTIC SKIRTING ON FREE-STANDING KERB

4.8 Number of Coats and Thickness — The number of coats for a particular position and for a given total thickness depends in each coat on the maximum thickness of bitumen mastic that is possible to apply while the material is in a warm plastic state. The requirements are as laid down in **4.8.1** to **4.8.5**.

4.8.1 On horizontal surfaces and on slopes up to 30°, but excluding horizontal damp-proof treatment in walls, two coats of equal thickness to a total thickness of not less than 20 mm shall be applied.

4.8.2 On a horizontal roof subject to foot traffic, such as a terrace or balcony, two coats of bitumen mastic shall be applied. The first coat shall be minimum 10 mm thick and the second coat minimum 15 mm thick.

4.8.3 On vertical surfaces other than timber, including skirtings, upstands and drips and on slopes over 30°, either two coats to a total thickness of not less than 13 mm or three coats to a total thickness of not less than 20 mm shall be applied.

4.8.4 On slopes and on vertical surfaces of timber three coats of bitumen mastic shall be applied to the reinforcement to a total thickness of not less than 20 mm.

4.8.5 At the intersection of the two planes forming an internal angle and after the bitumen mastic has been laid on horizontal, sloping and vertical surfaces, a solid angle fillet of bitumen mastic, not less than 50 mm wide on its face, shall be formed in two-coat work (*see* Fig. 3 and 4).

4.9 Movement Joints — Where it is considered necessary to provide movement joints in the roof structure, these should be of the twin kerb type with a suitable metal capping (*see* Fig. 5).

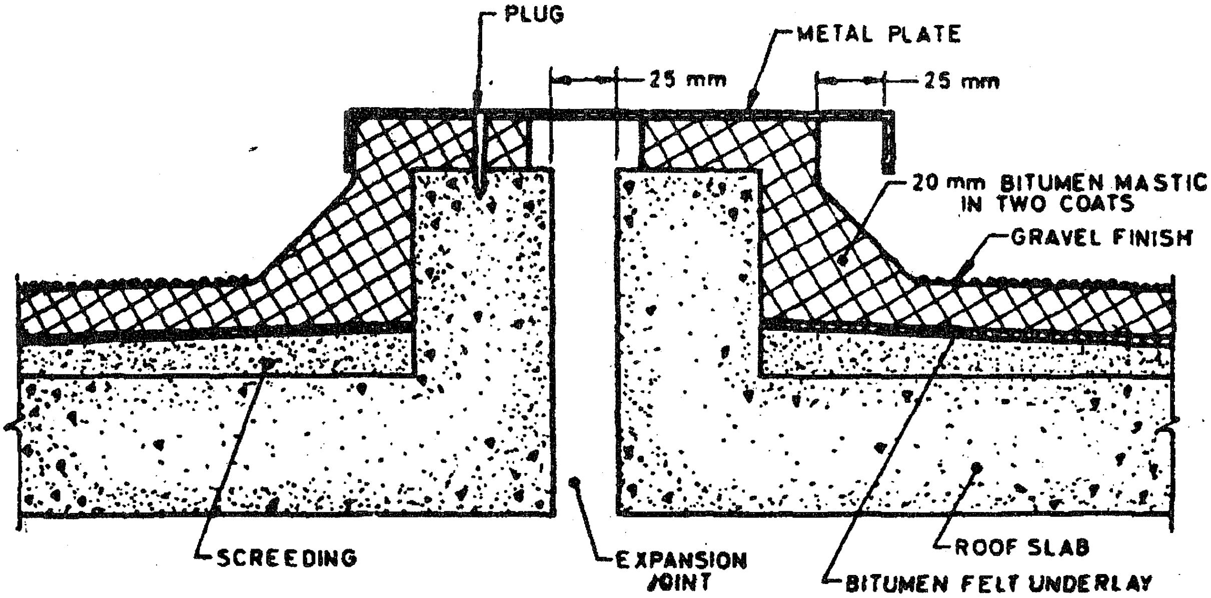

FIG. 5 EXPANSION JOINT IN FLAT ROOF TWIN KERB TYPE

4.10 Solar Reflectivity — The absorption of solar heat may be substantially reduced by embedding light coloured mineral aggregate in bitumen dressing compound. The finished bitumen mastic roofing may also be covered with light coloured cement concrete tiles or with a sand and cement screed cut into paving squares (*see* Fig. 6).

5. METHODS OF LAYING AND WORKMANSHIP

5.1 Protection and Storage of Materials — The mechanical mixer shall be as near as possible to the place where the bitumen mastic is to be laid, so as to avoid cooling of the material during the conveyance. The blocks of bitumen mastic and other materials required shall also be placed as near as possible to the area of roof to be treated.

5.1.1 Dry storage shall be provided for materials, such as felt underlays, thermal insulating material, metal lathing, gauges and metal edgings. Normally the mechanical mixer and the blocks of mastic need no such protection. Bitumen mastic shall be delivered to the site either in the form of blocks for remelting in a mechanical mixer or in a molten condition delivered in a mobile mechanical mixer.

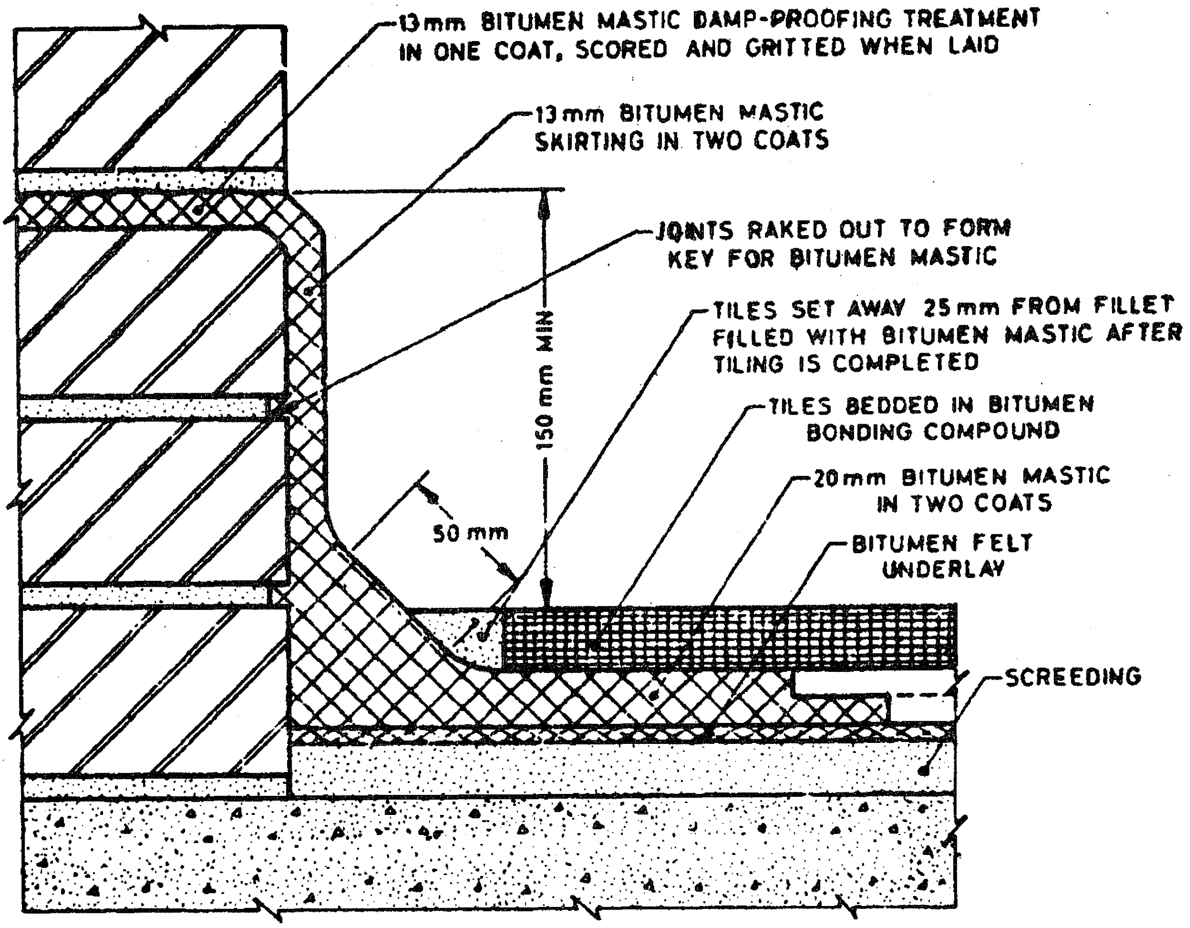
13mm BITUMEN MASTIC DAMP-PROOFING TREATMENT IN ONE COAT, SCORED AND GRITTED WHEN LAID
13mm BITUMEN MASTIC SKIRTING IN TWO COATS
JOINTS RAKED OUT TO FORM KEY FOR BITUMEN MASTIC
TILES SET AWAY 25mm FROM FILLET FILLED WITH BITUMEN MASTIC AFTER TILING IS COMPLETED
TILES BEDDED IN BITUMEN BONDING COMPOUND
20mm BITUMEN MASTIC IN TWO COATS
BITUMEN FELT UNDERLAY
SCREEDING
150 mm MIN
50 mm

FIG. 6 BITUMEN MASTIC LAID ON SCREEDED ROOF AND FINISHED WITH TILES

5.2 Precautionary Measures Before Laying — The operator shall not start laying the bitumen mastic until all preliminary work including laying of the underlay has been completed. The laying of bitumen mastic shall not be commenced until the surface of the base is sufficiently set to withstand, without damage, the traffic involved in laying operations. All other works which are liable to damage the bitumen mastic shall have been completed. When this is not possible, adequate protection of the bitumen mastic against damage shall be arranged prior to and during the course of subsequent building operations. For example, special care is necessary to avoid damage to the surface of the bitumen mastic laid on the roof by careless handling of scaffolding and other builder's accessories; by mixing or depositing cement and mortar upon its surface; by the storing of heavy material of any kind on the bitumen mastic surface. Paint, distemper and solvents, even in small quantities, shall not be allowed to drop on the bitumen mastic. The following shall be ensured before actual laying of the mastic:

a) The provision of scaffolding and hoisting facilities for the materials and plant;

b) The preparation of various surfaces of the base, including the provision of an adequate key to any vertical and steeply sloping surface, also protection of the surfaces of the base from the weather immediately prior to the laying of the bitumen mastic; and

c) The fixing of all metal work, such as flashings, drips and outlets.

5.3 Setting Out the Work — The operator shall examine and check the gradients, the direction of the slopes and the condition of the surface on which the bitumen mastic is to be laid. The design of the roof and the number of operatives engaged determine the setting out and the size of the bays. The dimensions of each bay shall be such that easy control by the operator is ensured during the process of laying and rubbing.

5.4 Remelting — Remelting shall be carried out at the site of the works in a mechanical mixer. The type of remelting plant selected for use shall be governed by the site conditions and the area of the roof to be covered. Blocks of bitumen mastic conforming to IS : 3037-1965* shall be sent to the site, broken to pieces and then stacked in layers, first round the sides of the mixer and then inwards towards the centre. The charge in the mechanical mixer shall be gradually heated to about 200°C and when the bitumen mastic has attained a molten condition, it shall be agitated continuously to ensure a uniform consistency. Any coarse aggregate required shall then be added to the hot bitumen mastic until the consistency is uniform. At no time during remelting shall the temperature of the bitumen mastic exceed 200°C. Whether the bitumen mastic is transferred to the site in a molten condition or remelted on the site, the total duration of heating and the type of plant used shall be such that the properties of the bitumen mastic shall not be impaired. When the bitumen mastic is in a sufficiently molten state to be workable, buckets shall be used for transporting the material, in small quantities from the mechanical mixer. The inside of the bucket shall be coated with a fine, inert dust. Ashes or oil shall not be used for this purpose.

5.5 Technique of Laying

5.5.1 *Spreading*

a) Each coat of each bay shall be spread evenly and uniformly by means of a float to the recommended thickness, on to the previously prepared surface, the isolating membrane or the preceding coat.

b) Each coat of bitumen mastic shall be followed, without delay by the succeeding coat, since exposure to contamination, for example, by dust or dirt, might impair adhesion and cause blistering.

c) The junction between two contiguous bays of a coat of bitumen mastic shall not be less than 150 mm from a corresponding junction in a preceding coat.

d) When bitumen mastic is laid horizontally, timber gauges of specified thickness shall be used during the laying of each coat.

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*Specification for bitumen mastic for use in waterproofing of roofs.

e) When bitumen mastic is laid on vertical or steeply sloping surfaces, the first coat is essentially an adhesive layer which acts as a base to ensure complete bonding of subsequent coats.

f) Any ' blows ' shall be pierced and the affected area be carefully made good while the bitumen mastic is still warm.

5.5.2 *Surface Finish* — Immediately after the completion of laying the required number of coats and while the bitumen mastic is still warm, horizontal surfaces and slight slopes shall be well rubbed with a wood float, using clean sharp sand passing 850-micron IS Sieve and retained on 300-micron IS Sieve (*see* IS : 460-1962*). Special attention should be given to the junction between bays. When rubbing, care shall be taken to avoid sand spreading over exposed edges of a bay. If this occurs the edges shall be brushed clean before the next bay of bitumen mastic is laid.

5.5.3 *Final Finish*

a) To avoid absorption of solar heat, light coloured mineral aggregates or pea-size gravel may be evenly spread shoulder to shoulder over the entire surface. The aggregates shall be stuck to the top surface with bituminous bonding material.

b) The bitumen mastic top may also be paved with cement concrete flooring tiles conforming to IS : 1237-1959†. The concrete tile finish is recommended where the roof surface is subjected to continuous foot traffic. The bitumen primer conforming to IS : 3384-1965‡ shall be applied to the surface of the bitumen mastic flat roofing and allowed to dry. The concrete tiles shall be fixed to the primed surface of the bitumen mastic by pouring out from a can just sufficient quantity of hot bituminous bonding material. Care should be taken not to squeeze up the bituminous compound between the tiles; if any compound is squeezed up, it should be allowed to get cold before removing from the surface of the tile. A space 75 mm wide should be left at the angle fillet of all upstands and perimeter walls and an open joint 25 mm wide shall be formed at approximately 9 m^2 of the area laid and be subsequently filled with hot bitumen bonding material.

c) Where decorative finish is necessary aluminium paint free from material deleterious to bitumen mastic or any other coloured bitumen emulsion paint may be used.

5.5.4 *Protection of Surface*

a) The treatment laid should not be put into service until the bitumen mastic has cooled to the prevailing atmospheric temperature.

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*Specification for test sieves (*revised*).

†Specification for cement concrete flooring tiles.

‡Specification for bitumen primer use in waterproofing and damp-proofing.

b) Care shall be taken to avoid damage to the surface due to careless handling of builder's tools.

5.5.5 *Associated Details in the Laying Operation* — During the laying of bitumen mastic, the following details should be carefully observed:

a) *Insulating materials* — Where the insulating materials are laid immediately under the bitumen mastic, they shall be bedded into hot bitumen compound over a vapour barrier which shall be bonded to the base with hot bitumen compound. The insulation board shall be laid breaking joint and be immediately covered with isolating membrane and bitumen mastic. At the close of each day's work, exposed edges of the insulation shall be sealed by turning the vapour barrier up by 150 mm over the edge of the insulation and sealed with bitumen mastic (*see* Fig. 1).

b) *Junctions* — Special care shall be taken in laying bitumen mastic to form an efficient junction with the edge of a bay already laid. The hot bitumen mastic shall be taken over the edge of the existing bay and allowed to remain sufficiently long to ensure complete fusion between the two bays. When the edge of a bitumen mastic bay is contaminated it shall be cleaned by a temporary application of hot bitumen mastic.

c) *Skirting and upstands* — Particular care shall be taken to ensure proper adhesion of the first coat of bitumen mastic. The exposed upper most part of the bitumen mastic skirting shall be formed with a splay to shed rain water, even though a metal flashing may be fixed to cover the exposed part. A similar splay is formed when bitumen mastic is continued through the wall to form a horizontal damp-proof treatment (*see* Fig. 7).

d) *Internal angles* — All solid fillets at internal angles shall be laid in two coats, as a separate operation. It is essential that the last coat of bitumen mastic of contiguous surfaces shall be warmed and cleaned, by the application of hot bitumen mastic, before the solid fillets are formed.

e) *External angles* — Special care shall be taken that the full thickness of bitumen mastic is maintained at all external angles formed by intersecting planes, whether horizontal, sloping or vertical.

f) *Keys formed of metal* — Metal lathing shall be fixed to the following:

   1) A wooden free-standing kerb of a timber base, when the use of a metal key is essential.

   2) On timber surfaces in a sloping or vertical position.

g) *Projecting pipes* — When a pipe passes through a roof on which waterproofing treatment is to be laid, a bitumen mastic fillet shall be bent round it in the manner as shown in Fig. 8. The treatment shall be continued over the metal surface coated with bituminous

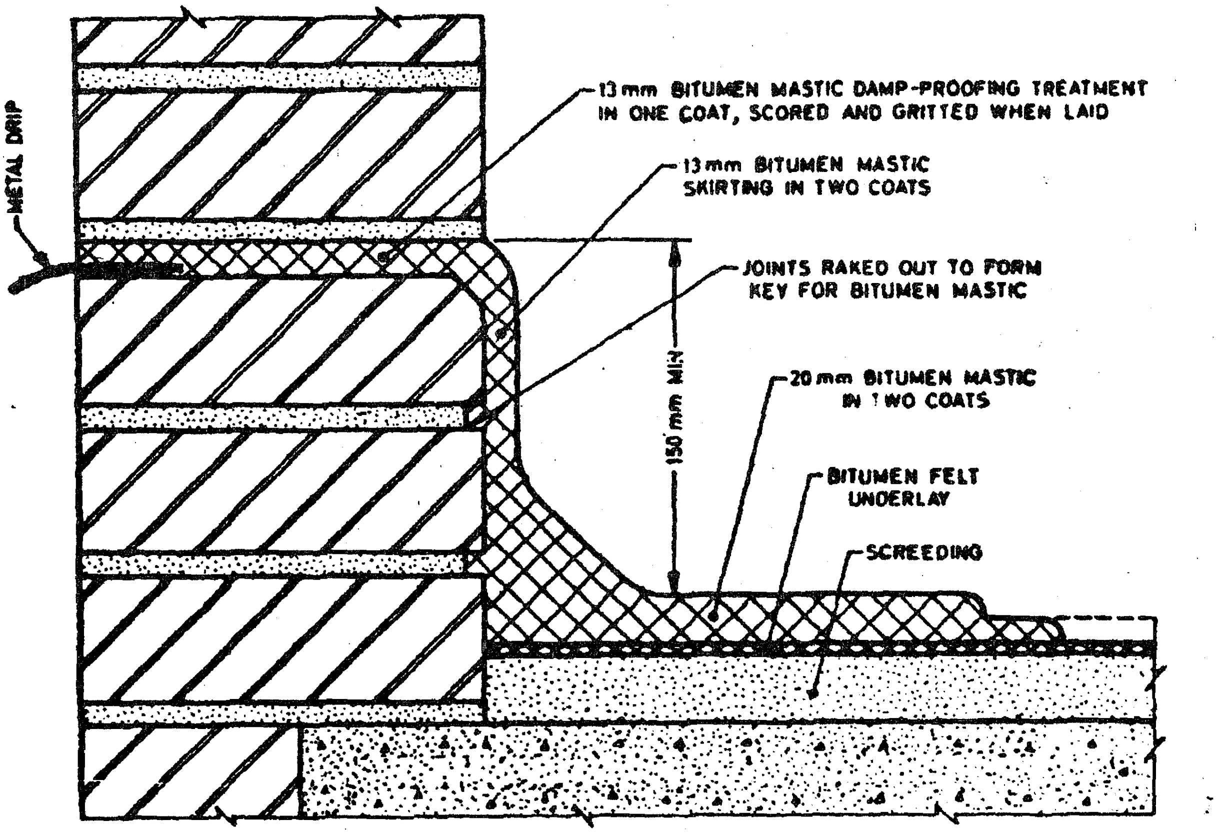
13 mm BITUMEN MASTIC DAMP-PROOFING TREATMENT IN ONE COAT, SCORED AND GRITTED WHEN LAID
METAL DRIP
13 mm BITUMEN MASTIC SKIRTING IN TWO COATS
JOINTS RAKED OUT TO FORM KEY FOR BITUMEN MASTIC
150 mm MIN
20 mm BITUMEN MASTIC IN TWO COATS
BITUMEN FELT UNDERLAY
SCREEDING

FIG. 7 BITUMEN MASTIC LAID ON SCREEDED ROOF WITH BITUMEN MASTIC SKIRTING AND DAMP-PROOFING TREATMENT TO WALL

paint up to a stipulated height. The metallic reinforcements shall be placed vertically against the first layer of bitumen mastic. The top layer shall be built up over the reinforcement. Neat bitumen or plastic bitumen shall be used as grout at the joint. A metal collar shall be fixed over it.

6. INSPECTION

6.1 The work shall be inspected while in progress and after completion special attention shall be paid to the following points:

a) General condition of the roof,

b) Regular surface of the roof or the base and correct laying of the underlay when used,

c) Cleanliness of plant for remelting,

d) Correct temperature of the mixture prior to laying (180°C to 200°C),

e) Use of fine inert dust to assist removal of mixture from the buckets,
f) Making good all 'blows',
g) Correct uniformity and correct thickness,
h) Removal of all bitumen tailings,
j) Correct level and smoothness of finish, and
k) Correct pattern of decorative design.

7. MAINTENANCE

7.1 Periodical maintenance may not be required for a well laid bitumen mastic roof covering. During the progress of alterations to a structure, it may become necessary to remove part of or break through a bitumen mastic roof covering. Considerable damage may be caused to the existing bitumen mastic roofing by attempting to cut it away with a hammer and chisel or to soften it with a blow lamp. When it is required to remove the bitumen mastic, the correct method is to place hot bitumen mastic around and over the area of the concerned roof. When the area is sufficiently soft, it shall be removed carefully. When jointing new bitumen mastic to existing bitumen mastic, the principle of the lapped joint shall be observed. The perimeter of the existing bitumen mastic shall be softened to permit removal of material to a depth of half its thickness, for a width of not less than 75 mm.

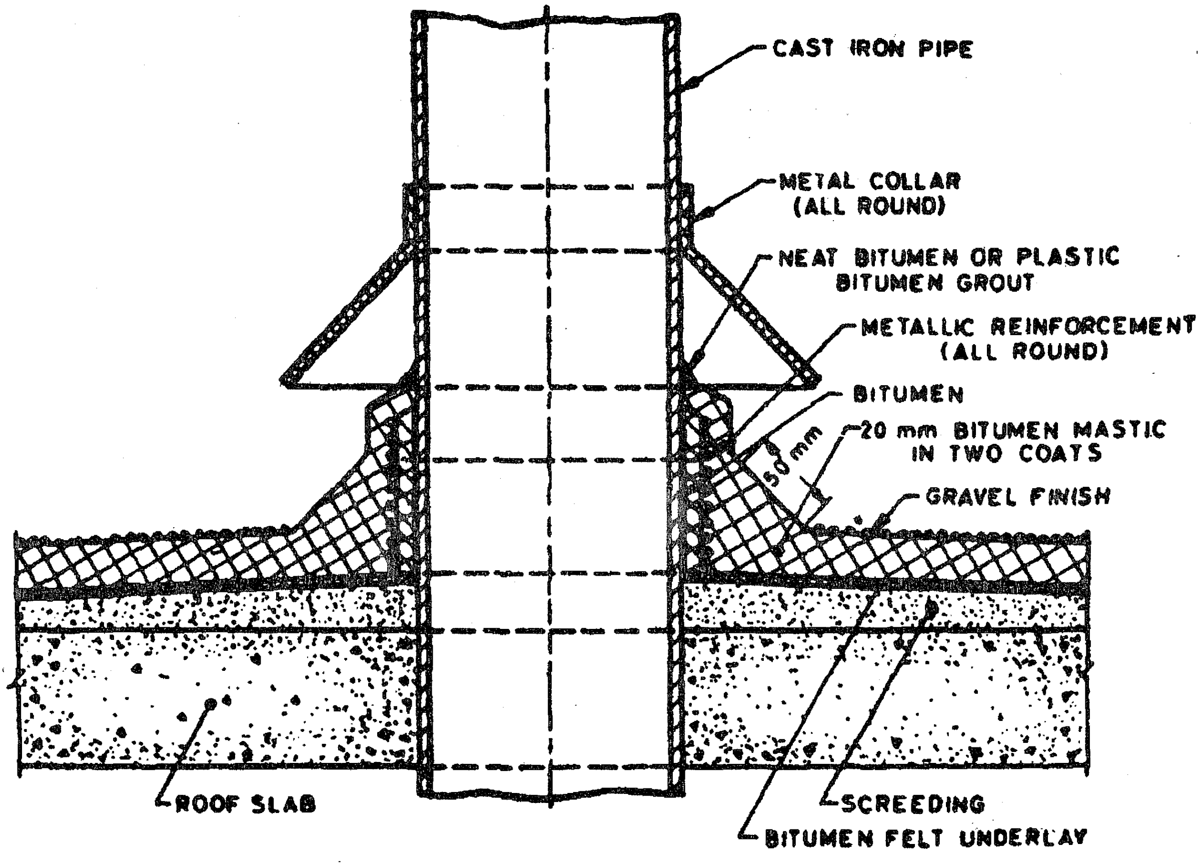
CAST IRON PIPE
METAL COLLAR (ALL ROUND)
NEAT BITUMEN OR PLASTIC BITUMEN GROUT
METALLIC REINFORCEMENT (ALL ROUND)
BITUMEN
50 mm
20 mm BITUMEN MASTIC IN TWO COATS
GRAVEL FINISH
ROOF SLAB
SCREEDING
BITUMEN FELT UNDERLAY

FIG. 8 TREATMENT WHEN A PIPE PASSES THROUGH A ROOF SLAB

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